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the season. Keeping the bottled water for months and even years does not alter its osmotic pressure appreciably.

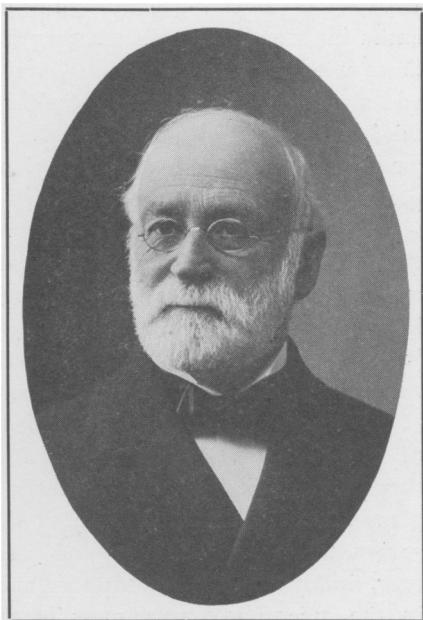
The conclusion to be drawn from the material just presented is simply that *bog waters do not have an appreciably higher concentration of dissolved substances than do the streams and lakes of the same region.* Thus we are driven to the idea that if there is any property of bog water which prevents ordinary swamp plants from growing therein, this property must rest upon the chemical nature of the very small amounts of dissolved substances present. The nature and physiological properties of these bodies the writer is now studying.—BURTON EDWARD LIVINGSTON, *Hull Botanical Laboratory, The University of Chicago.*

WILLIAM M. CANBY.

(WITH PORTRAIT)

THE announcement of the death of Mr. William M. Canby, of Wilmington, Delaware, will come as a personal loss to botanists throughout the country, for he has been as well the intimate friend of many of them as a most generous contributor to all our public and private herbaria. Although Mr. Canby had not been in the best of health for some time, his condition was not such as to cause any serious alarm to his friends. On February 23 he went south for rest and change, but he contracted a severe cold, which was followed by a chill, and died very suddenly March 10, at North Augusta, South Carolina.

William Marriott Canby was born in Philadelphia, Pennsylvania, March 17, 1831, thus being nearly 73 years of age at the time of his death. He received his early education at the Friends School at Westtown, near West Chester, Pennsylvania, and from private tutors.



Although to most readers of this sketch Mr. Canby is known only as a botanist or as a collector, he was all his life a most industrious business man. The mere mention of the various enterprises in which he was engaged shows that he was a man of much importance in his community. For many years he was engaged in railroad business as receiver, president, or director, holding the last position in connection with one of the branches of the B. & O. Railway at the time of his death. He was also a director in various banking and trust companies, and for twenty-four years had been president of the Wilmington Savings Fund Society, one of the most substantial institutions of his home city. As a member and president of the Park Commission of Wilmington for more than twenty years, he rendered most valuable service to the community, and the beautiful park system of Wilmington is said to be largely due to his efforts. In politics he was a Republican, but was elected to the city council as an independent for the purpose of doing away with public graft and a corrupt political ring.

Mr. Canby early developed a love for botany, and as long ago as 1858 began collecting plants, and for the remainder of his life was an enthusiastic collector, distributing his material with a lavish hand to those who showed even the least interest in it. He traveled extensively, and always went prepared to care for rare or strange plants which he might find. His knowledge of the plant life of his own state and the "eastern shore" region of Maryland was very great. One of my pleasantest recollections of him is in connection with an excursion of several days in this region. His knowledge of the plants, their haunts, their names, their peculiarities, astonished me. His method of work was that of an enthusiast. Stopping at some good collecting ground, he would spend several hours gathering specimens, reaching the station just in time to make his train, spending the next hour or so in putting away his plants, and ready to repeat the operation at the next station.

His most important work of this kind was that as botanist in charge of the Northern Transcontinental Survey of 1882-3. This was a survey undertaken by the Northern Pacific Railway Company, which planned a most extensive study of the natural history resources of the region through which the road passes. The railway company, however, finally withdrew its support, and the survey was never completed. In the meantime a great mass of material was collected containing many new species, and the specimens were afterwards freely distributed to all the large private and public herbaria.

The Canby herbarium was for many years one of the most impor-

tant herbaria in the country and was always placed at the service of monographers who wished to study it. It not only represented the forty-five years of collecting of its founder, but was increased through extensive exchanges and purchases. For years Mr. Canby bought every collection offered for sale. It was largely through the efforts of a few men, one of whom was Mr. Canby, that Parry and Palmer made their trip to San Luis Potosi, Mexico, in 1877, which yielded such an astonishing number of new plants. He also aided Mr. Pringle in his early struggles in Mexico.

In 1893 his herbarium numbered some 30,000 specimens, and was about this time sold to the College of Pharmacy of New York city, where it now remains. He had no sooner disposed of his herbarium than he began, with all the enthusiasm of a young man, to build up a new one, giving it to the Natural History Society of Delaware at Wilmington. This herbarium contains about 15,000 species at the present time. Although Mr. Canby was a very keen and able botanist, he rarely described new plants, usually contenting himself with pointing out differences and permitting specialists to publish the results of his discoveries.

Quite a number of plants have been named in his honor. The genus *Canbya*, though named by Dr. C. C. Parry, was described by Dr. Asa Gray in the Proceedings of the American Academy in 1876. Among the species I recall the following: *Angelica Canbyi* C. & R., *Crataegus Canbyi* Sargent, *Hydrocotyle Canbyi* C. & R., *Ligusticum Canbyi* C. & R., *Lobelia Canbyi* Gray, *Pachystima Canbyi* Gray, *Pedicularis Canbyi* Gray, *Peucedanum Canbyi* C. & R.

Although Mr. Canby never wrote any extensive work, he was an occasional contributor to botanical journals, and some eleven articles in this journal were furnished by him. Mention should be made of his very valuable contributions to the study of insectivorous plants, especially in connection with *Dionaea* and *Darlingtonia*. Darwin made free use of his observations and refers to his work in high terms. In his writings he always referred to Mr. Canby as "Dr. Canby," although I believe he never received a degree of any kind. He once told the writer that one of our American colleges had offered him the degree of Ph.D., but he declined it.—J. N. ROSE, *U. S. National Herbarium, Washington, D. C.*

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ANATOMY OF COTYLEDONS.

LAST year the writer published a short article¹ describing some observations on the anatomy of cotyledons with a comparison of cotyledons and foliage leaves in the Papilionaceae. In that paper it was stated that the study would be continued to other plant families. This has been done in the case of representative species of the Cruciferae and Ranunculaceae by two graduate students, Miss Neata Clark and Miss Martha Phelps. A further investigation will be made in these same families and with other families.

In the Ranunculaceae and Cruciferae studied there is not as great a difference in structure between cotyledons and leaves as was seen in the Papilionaceae. Thus the form of the epidermal cells is frequently the same in the two structures. There are, however, some differences in the arrangement and number of stomata, these being sometimes absent from one surface of the leaf, but present on both surfaces of the cotyledon. The trichome structures are frequently absent from the cotyledon when present on the leaf, and sometimes when present on the cotyledon they are of special form.

¹University of Colorado Studies **1**:239-243. 1903.